
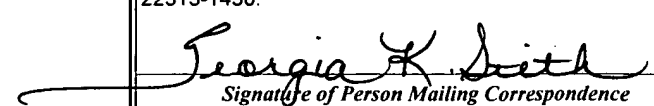
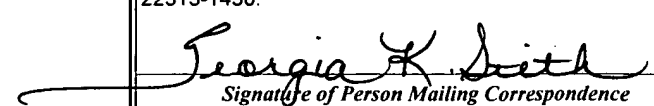
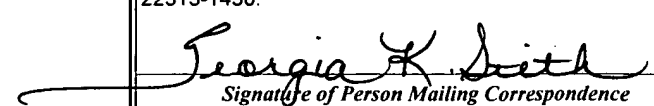
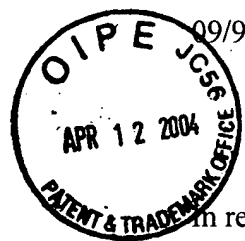


image AF/2828

NOTICE OF APPEAL FROM THE PRIMARY EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES (Large Entity)			Docket No. LMPY-12910			
In Re Application Of: Hans-Stephan Albrecht et al.						
Serial No. 09/903,425	Filing Date July 10, 2001	Examiner Hung T. Vy	Group Art Unit 2828			
Invention: PRECISE MONITOR ETALON CALIBRATION TECHNIQUE						
<p style="text-align: center;"><u>TO THE COMMISSIONER FOR PATENTS:</u></p> <p>Applicant(s) hereby appeal(s) to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner dated January 13, 2004, finally rejecting Claim(s) 1-19.</p> <p>The fee for this Notice of Appeal is: \$330.00</p> <p><input checked="" type="checkbox"/> A check in the amount of the fee is enclosed.</p> <p><input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 50-1703</p> <p> Signature</p> <p>Dated: April 8, 2004</p> <p>Brian J. Keating (Reg. No.) 39,520</p> <p>STALLMAN & POLLOCK LLP 121 Spear Street, Suite 290 San Francisco, CA 94105</p> <p>Telephone: (415) 512-1312 Facsimile: (415) 512-1362</p> <p>04/14/2004 RMEBRAHT 00000095 09903425 01 FC:1401 330.00 OP</p> <p>CC:</p>						
<table border="1"><tr><td>I certify that this document and fee is being deposited on 04/9/2004 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.</td></tr><tr><td> Signature of Person Mailing Correspondence</td></tr><tr><td>Georgia K. Stith Typed or Printed Name of Person Mailing Correspondence</td></tr></table>				I certify that this document and fee is being deposited on 04/9/2004 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.	 Signature of Person Mailing Correspondence	Georgia K. Stith Typed or Printed Name of Person Mailing Correspondence
I certify that this document and fee is being deposited on 04/9/2004 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.						
 Signature of Person Mailing Correspondence						
Georgia K. Stith Typed or Printed Name of Person Mailing Correspondence						



09/903,425

PATENT

-1-

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Hans-Stephan Albrecht, et al

Application No.: 09/903,425

Filed: July 10, 2001

For: PRECISE MONITOR ETALON
CALIBRATION TECHNIQUE

Group Art Unit: 2828

Examiner: Hung T. Vy

APPEAL BRIEF

121 Spear Street, Suite 290
San Francisco, CA 94105
(415) 512-1312

M/S APPEAL BRIEF PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope, addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 9, 2004.

STALLMAN & POLLOCK LLP

Dated: 04/09/2004

By:

Georgia K. Stith
Georgia K. Stith

Sir:

This is a brief for an appeal from a Final Office Action mailed January 13, 2004, and from a Notice of Appeal mailed herewith. Three copies of this appeal brief are enclosed.

Real Party in Interest

The real party of interest is Lambda Physik, AG, pursuant to the assignment recorded in the PTO on September 26, 2001 at reel/frame 012196/0890.

Related Appeals and Interferences

There are no known related appeals or interferences.

Status of Claims

Claims 1-20 were originally presented on the filing of the present application 09/903,425. Claim 20 was subsequently canceled. Claims 1-19 are pending. Claims 1, 3, 5, 6, 7 were Amended in a Response to a Non-Final Office Action (this Amendment was mailed on

Atty Docket No.: LMPY-12910 [273/U]

December 4, 2003). Claims 2, 4, 8-19 are pending as originally filed. The pending claims are shown in the appendix hereto.

Status of Amendments

No amendments or responses were filed subsequent to the final rejection dated January 13, 2004.

Summary of the Invention

In operation of laser systems it has been found that the wavelength of an output laser beam can vary depending on the operating conditions of the laser. In some systems a portion of the laser beam is directed to a wavelength measurement system (WMS). Based on the wavelength detected by the WMS aspects of the lasers operation are varied to control the wavelength of the laser beam. The calibration of the WMS is important because adjustments in the operation of the laser system are made based on the wavelength measured by the WMS. The calibration of the WMS generally requires the laser be taken off line to calibrate the WMS, and the cost and loss of productivity resulting from calibration of the WMS can be significant. (See e.g. discussion of this issue in patent app. p. 3, lines 20-23). The invention provides for operating the laser system in a manner which allows for the need to recalibrate the WMS to be reduced. (See e.g. patent app. p. 28, lines 1-9) This operation provides for taking steps to determine the drift in the performance of the WMS, and then accounting for this drift in the performance of the WMS. See e.g. patent app. p. 28, lines 11-33). By accounting for the drift in the performance of the WMS the need to frequently recalibrate the WMS to an absolute wavelength reference is reduced.

As shown by the above discussion, one aspect of the invention stems from the recognition that the performance of the wavelength measurement system tends to drift over time from its calibration point. For example, in one embodiment of a WMS, the measured wavelength determined from the interference pattern captured on an array detector associated with the monitor etalon, or spectrally dispersed distribution detected at the array detector due to dispersion from a grating or prism, when the beam traverses the interference or dispersive optics of the WMS fluctuates from the true wavelength of the beam as the laser operates after a calibration of the WMS to the reference line. See e.g., patent app. 2, lines 22-33.

This type of drift is most notably due to the effects of the DUV or VUV laser beam striking a surface or surfaces of the interference or dispersion optics of the WMS, such as the plates of the etalon or the surface of the grating or surfaces of a dispersive prism, etc. Among these effects, the gap spacing may vary as the etalon plates are heated due to absorption of some of the incident beam. Localized heating of the grating or prism surface can cause topographic distortions. Also, moisture may come out of the etalon, prism or grating surface when it heats up. Moreover, coating layer compaction may occur on the inner surfaces of the etalon, or on surfaces of the grating or prism, if used. See e.g., patent app. p. 2, line 29-p. 3, line 6.

There may also be geometric factors causing the measured wavelengths obtained using the WMS to drift away from the true values. Among these, the orientations of optics such as the angle of tilt of the etalon may change systematically with time of laser operation relative to the surface of the array detector and/or incoming beam. The projection focus of the spectral distribution or pattern, produced by the interference of the beam at the etalon or dispersion at the grating or prism, onto the array detector may also vary with time of laser operation.

When a monitor etalon is used as a WMS, the etalon may be re-calibrated periodically, as mentioned above, to prevent the amount of drift from approaching an intolerable amount. However, these multiple re-calibration procedures are laborious and time-consuming, and would be typically performed when the laser is undesirably taken down or offline. It is desired to have a technique for compensating optical drift of the monitor etalon that avoids laser system downtime.

Moreover, the optical drift of the monitor etalon, as well as other optical, thermal and electronic phenomena, conventionally produces increasing uncertainty and imprecision at times following the initial calibration or re-calibration procedure. It is desired to have a method of compensating optical drift of the monitor etalon or other optics of a wavelength measurement system such that the output beam of the laser system is reliably spectrally located at the desired wavelength after long or short periods of laser operation following an initial absolute wavelength calibration procedure. See e.g., p. 3, lines 15-33.

Issues

One issue on appeal is whether claims 1-14 are unpatentable under 35 USC §102(e) as being anticipated by Everage et al. (U.S. Patent No. 6,078,599).

One issue on appeal is whether claims 15-19 are unpatentable under 35 USC §103 over Everage et al., (U.S. Patent No. 6,078,599) in view of Myers et al. (U.S. Patent No. 6,128,323).

One issue on appeal is whether claims 1-19 are unpatentable under 35 USC §102(b) as being anticipated by Das et al. (U.S. Patent No. 5,835,520).

Grouping of the Claims

The claims can be considered in two groups.

The first group of claims are claims 1-13.

The second group of claims are claims 14-19. Claims 14-19 are dependent claims from claims in the first group of claims. The second group of claims is distinguishable from the first group of claims, because the second group of claims include elements relating to aspects of correlating the drift for the WMS to operational parameters and conditions of the laser system.

Attachments

Attached herewith please find an appendix containing the claims involved in the appeal.

Argument

Claims 1 – 14 stand rejected under 35 U.S.C. §102(e) in view of as being anticipated by Everage.

Rejection of Claims under the Everage reference:

In rejecting the claims under Everage the Office Action recites a number of elements which are purportedly disclosed in the teaching of Everage. In order to focus the discussion and analysis herein, only specific elements of the pending claims and the teaching of Everage will be considered in detail; although it should be noted that this is not in fact a concession that all of the other elements recited in the claims area found in Everage.

In connection with the rejection under the Everage, the Final Office Action states in part that Everage discloses:

- (c) Determining the wavelength (42) of the laser beam, said wavelength determining step comprising the steps of:
 - (i) transmitting wavelength information measured by said wavelength measurement system;
 - (ii) **retrieving a drift compensation value stored as corresponding to a current laser system operation condition; and**

- (iii) **calculating the wavelength of the laser beam based on the transmitted wavelength information and the retrieved drift compensation value (See fig. 6); and**
- (c) tuning (See column 2, line 62-65) the output beam to a target (4) wavelength using the wavelength measurement system (See fig 4);
- (d) detecting a measured wavelength of the output beam using the wavelength measurement system after a predetermined period of laser operation (See fig. 4, 42 is computer system so the computer will predetermined period of laser operation).
- (e) **calculating a compensated wavelength by figuring in a previously determined drift compensation value (See fig. 5 and 6); and**
- (f) adjusting the wavelength of the laser beam to the target wavelength when the compensated wavelength differs from the target wavelength (See 4, 5 and 6).

Final Office Action, p. 3. Portions of the above language from the Final Office Action have been highlighted to identify areas where there does not appear to be support for rejecting the pending claims.

For example, “retrieving a drift compensation” which is referred to in the Final Office Action without reference to a specific part of Everage, appears to be a reference to the discussion in Everage regarding using a detection device in connection with learning characteristics of wavelength chirp for a laser. Everage recognizes that the wavelength chirp for the laser can change over time and repeated usage can allow for a learning algorithm “to learn changing characteristics of the wavelength chirp from [the] laser”. Everage col. 3:63-65. Further, at col. 4: lines 7 – 15, Everage discusses using learned characteristics of *wavelength chirp* to adjust the wavelength output by the laser. Everage does not, however, discuss or suggest that the drift of the detection device is something which can be corrected for, and indeed, Everage does not even appear to recognize that drift in the performance of the detection device could be a potential problem. As discussed in Everage at col. 4: lines 56-67, the learned characteristics of the wavelength chirp are used to reduce the wavelength drift of the wavelength chirp.

In Everage, the operation of the wavelength detection device is discussed in part at col. 3, lines 13-44. This discussion states that the detection device “may be a conventional device which detects the wavelength of laser beam 38.” Col. 3: lines 16-17. Everage then goes onto refer to a number of other references which purportedly discuss “detecting and tuning the wavelength of laser light” col. 3: line 19. Everage also makes clear the actual operation of the detection device is not relevant to the teaching of Everage, stating: “The precise technique used to provide accurate wavelength detection is not relevant to this invention.” Col. 3: 31-32.

The discussion throughout Everage appears to be based on the idea of using a detection device to detect the wavelength output by the laser. The discussion of Everage does not appear

to provide any recognition of the very problem which is addressed by the pending claims of the present application, and which is discussed in detail in the specification of the present application.

Specifically, while Everage discusses using a detection device to determine wavelength information, Everage does not recognize the importance of being able to use the detection device, without needing to recalibrate the detection device (or at least minimizing the frequency of recalibration) so as to minimize down time while the system is being recalibrated. Indeed, there appears to be no discussion, or recognition, in Everage which suggests that the detection device might drift in terms of its performance. The drift discussed in Everage appears to clearly be the drift of the output of the laser, and not a drift in the detection device. See e.g. Everage co. 4, lines 56-67.

The discussion from the specification of the present application, provides significant and important teaching which does not appear to be shown in any of the references discussed in the Final Office Action. Specifically, the present application recognizes that the performance of the wavelength measurement system can change, or drift, overtime. For example, the specification discusses the fact that among other things, the drift can be due to the effects of the DUV or VUV laser beam striking a surface or surfaces of the interference or dispersion optics of the WMS, such as the plates of the etalon or the surface of the grating or surfaces of a dispersive prism, and other effects may also contribute to drift of the performance of the WMS. In order to accommodate this drift in performance, one approach is to frequently re-calibrate the WMS, but this can lead to a significant amount of laser system downtime while the WMS is being recalibrated.

Having recognized that the drift of the WMS, particularly, the drift which results from the DUV or VUV laser beam striking components of the WMS, can lead to significant, need for recalibration, the inventors, developed a system where the drift of the WMS is characterized and stored. Thus, by determining the drift of the WMS, the drift can be accounted for when wavelength measurements are determined by the WMS. This means that frequency of recalibrating the WMS can be reduced, because the drift can be accounted for in the measurement data produced by WMS, and the data from the WMS can be corrected to account for the drift in the performance of the WMS.

It is respectfully submitted that the Everage reference does not appear to contain any suggestion that the drift of the detection system should be accounted for. Indeed, it would appear that from the teaching of Everage that the system does not take any steps to account for drift of the detection system. In fact, there appears to be no discussion related to the possible drift of the detection system.

Each of the independent claim recites some element of accounting for the drift of the WMS. For ease of reference, excerpts each of the independent claims relating to using, or determining, drift characteristics of the WMS of the laser system are shown below, and it is respectfully submit that this determination, or utilization, of a drift characteristic of the WMS is something which clearly does not appear to be disclosed in Everage.

Claim 1 recites in part: “(e) calculating a compensated wavelength by figuring in a previously determined **measurement system drift** compensation value; and (f) adjusting the wavelength of the laser beam to the target wavelength when the compensated wavelength differs from the target wavelength.”

Claim 3 recites in part: “(ii) retrieving a **drift compensation value for the measurement system stored as corresponding to a current laser system operating condition**; and (iii) calculating the wavelength of the laser beam based on the transmitted wavelength information and the retrieved **drift compensation value for the measurement system . . .** “

Claim 5, recites in part: “ (e) determining a drift compensation value for the measurement system based on a result of the comparing step”.

Claim 7 recites in part: “(e) determining a drift compensation value for the measurement system based on a result of the comparing step”.

Based on the discussion above it is respectfully submitted that Everage clearly does not disclose a system or method where the drift in the operation of the measurement system is accounted for as recited by each of the independent claims.

Further, it is recognized that in connection with the rejection of the dependent claims 10-14, the Final Office Action states in part that Everage discloses:

the wavelength measurement system comprises a monitor etalon (See column 1, line 18-32), **the drift compensation values are determined by comparing wavelength values determined using the monitor etalon with values determined using a calibrated spectrometer (it is inherent that the computer 46 and 40) in a test run.** It is inherent that the drift compensation values are tabulated with each entry in a table corresponding to a drift compensation value at a

different amount of laser operations because Everage et al disclose the computer system (46) and laser wavelength detection device (40).

Final Office Action, p. 4 (emphasis added). It is respectfully submitted that a review of Everage fails to support many aspects of the above statement from the Final Office action. For example, the Everage does not appear to even mention a calibrated spectrometer. However, even if one were to assume that a calibrated spectrometer was initially used in connection with calibrating the detection device of the laser system, there still would most importantly be no discussion, or recognition, in Everage regarding the fact that the performance of the WMS would drift overtime. Again the discussion in Everage regarding drift refers to drift in the wavelength of the laser output, and not any drift in the detection device.

Rejection of Claims 15-19 Based on Combination of Everage and Myers:

In connection with dependent claims 15-19, the Final Office Action refers to Myers et al. (U.S. Patent No. 6,128,323) in combination with Everage. The rejection of claims 15-19 is based in large measure on the assumption that Everage teaches accounting for a drift in the detection device. As discussed above, Everage clearly does not provide any discussion related to accounting for drift in detection device. The Myers reference does not appear to add any teaching regarding accounting for drift in performance a detection device, and indeed Myers is not cited as providing any teaching regarding accounting for drift in the performance of a WMS, or detection system.

Claims 15-16 depend from claim 14, and claim 14 recites in part that the drift compensation values for the WMS are tabulated with each entry in a table corresponding to a drift compensation value at a different amount of laser operation for a given set of laser operation conditions. Given that neither Everage or Myers discusses or suggests determining drift factors for a WMS, the combination of these references clearly would not result a system or method where drift compensation values for the WMS are in a table with drift compensation values corresponding to different amounts of laser operation.

Claim 18 and 19 depend from claim 17, and claim 17 recites in part that the drift compensation values are calculated from a function that corresponds to measured amounts of drift of the monitor etalon versus periods of laser operation. Given that neither Everage or Myers discusses or suggests determining drift factors for a monitor etalon, the combination of

these references clearly would not result a system or method where drift compensation values for the etalon correspond to periods of operation.

Rejection of Claims based on the Teaching of Das:

The Final Office Action also rejected claims 1-19 of the application under 35 USC §102(b) as being anticipated by Das (U.S. Patent No. 5,835,520). It is respectfully submitted that in the rejection based on Das, the Final Office Action does not provide very much discussion in connection with the elements of the claims which deal with compensating for the drift of the WMS. Specially, in connection with the Das reference and its purported disclosure regarding drift, the Final Office Action states:

“calculating a compensated wavelength by figuring in a previously determined drift compensation value (See column 6, line 19-22); . . .”

Office Action, p. 6. It is respectfully submitted that a review of Das, and particularly at Das col. 6, lines 19-22, does not provide any suggestion that one should compensate for the drift of a wavelength measurement system. Rather, Das et al. show that steps should be taken to minimize the drift of the measurement system. See e.g. Das et al. col. 6, lines 10-63. For example, Das et al, provides some description outlining requirements for a suitable wavemeter, stating:

The wavemeter used for a production lithography laser has to be compact and yet meet the requirements of good relative accuracy, small long term drift, and a good absolute precision with reference to an atomic line. The requirement in each case is $< \pm 0.15$ pm. Further, the wavelength measurement has to be insensitive to changes in the ambient temperature or pressure. In addition, the wavemeter should be capable of measuring the spectral bandwidth (FWHM) with an accuracy of ± 0.15 pm. The operating range of this wavemeter, on the other hand, can be relatively small, 248.35 \pm 0.30 nm.

Das et al. 6:23-33. Das et al. goes on to provide more information regarding minimizing the drift of the wavemeter, stating:

The wavemeter is calibrated at the factory with reference to a hollow cathode Ne-Fe lamp which has an absorption peak at 248.3271 nm. Experience has shown that these wavemeters can be made stable to within ± 0.5 pm. Furthermore, to eliminate ambient pressure dependent changes, both the grating and the etalon are housed inside individual pressurized housings. Temperature stability is achieved by using very low thermal expansion coefficient etalon spacers and good thermal management of the etalon housing.

Das et al. 6:53-62. It is respectfully submitted that the teaching of Das et al. expressly appears to teach that one should take care to minimize the wavemeter drift, but provides no suggestion, that one might actually take steps to account for drift which is present a wave measurement system. Thus, the teaching of Das et al does not anticipate or suggest the methods recited by the pending claims. Indeed, it appears the focused discussion of Das shown above, regarding steps which can be taken to stabilize the wavemeter, would suggest that the system of Das relies on the calibration of the wavemeter, and then the wavemeter being very stable. It is respectfully submitted that this discussion does not begin to approach the idea of determining a drift for the wavemeter, and then using this determined drift to correct for future measurements by the wavemeter.

CONCLUSION

For the reasons set forth above, Applicant respectfully submits that the claims 1-19 are not rendered obvious by the cited prior art, and a holding to that end by the Board is respectfully requested.

Respectfully submitted,

STALLMAN & POLLOCK LLP

Dated: April 8, 2004

By: 

Brian J. Keating
Reg. No. 39,520

Attorneys for Applicant(s)

Attorney Docket No. LMPY-12910

**Listing of Claims:**

1. (previously presented) A method for compensating optical drift of a wavelength measurement system used for relative wavelength tuning of an output beam of an excimer or molecular fluorine laser system, comprising the steps of:
 - (a) operating the laser system including generating a laser beam and directing a beam portion through the wavelength measurement system;
 - (b) calibrating the wavelength measurement system to an absolute reference;
 - (c) tuning the output beam to a target wavelength using the wavelength measurement system;
 - (d) detecting a measured wavelength of the output beam using the wavelength measurement system after a predetermined period of laser operation;
 - (e) calculating a compensated wavelength by figuring in a previously determined measurement system drift compensation value; and
 - (f) adjusting the wavelength of the laser beam to the target wavelength when the compensated wavelength differs from the target wavelength.
2. (original) The method of Claim 1, further comprising the step of repeating steps (d) through (f) a number times after additional periods of laser operation.
3. (previously presented) A method for operating an excimer or molecular fluorine laser system at a stabilized wavelength, the laser system including a wavelength measurement system calibrated to an absolute reference, for relative wavelength tuning, comprising the steps of:
 - (a) operating the laser system including generating a laser beam and directing a beam portion through the wavelength measurement system;
 - (b) calibrating the wavelength measurement system to an absolute reference;
 - (c) determining the wavelength of the laser beam, said wavelength determining step comprising the steps of:

- (i) transmitting wavelength information measured by said wavelength measurement system;
- (ii) retrieving a drift compensation value for the measurement system stored as corresponding to a current laser system operating condition; and
- (iii) calculating the wavelength of the laser beam based on the transmitted wavelength information and the retrieved drift compensation value for the measurement system; and
- (d) tuning the wavelength to a target wavelength when the determined wavelength differs from the target wavelength.

4. (original) The method of Claim 3, further comprising the step of repeating steps (c) through (d) a number times after additional periods of laser operation.

5. (previously presented) A method for preparing an excimer or molecular fluorine laser system to operate at a stabilized wavelength by compensating optical drift of a wavelength measurement system used for relative wavelength tuning of an output beam of the excimer or molecular fluorine laser system, comprising the steps of:

- (a) operating the laser system including generating a laser beam and directing a beam portion through the wavelength measurement system;
- (b) calibrating the wavelength measurement system to an absolute reference;
- (c) determining a value of the wavelength of the laser beam measured by the wavelength measurement system after a predetermined period of laser operation;
- (d) comparing the value of the wavelength measured by the wavelength measurement system after said predetermined period of laser operation with an actual value of the wavelength of the laser beam; and
- (e) determining a drift compensation value for the measurement system based on a result of the comparing step.

6. (currently amended) The method of Claim 5, further comprising the steps of:

(f) repeating steps (c) through (e) a number times after additional periods of laser operation; and

(g) storing the drift compensation values for the measurement system versus laser operation period of said wavelength measurement system for use with a wavelength stabilization routine of said laser system.

7. (previously presented) A method for preparing an excimer or molecular fluorine laser system to operate at a stabilized wavelength by compensating optical drift of a wavelength measurement system used for relative wavelength tuning of an output beam of the excimer or molecular fluorine laser system, comprising the steps of:

(a) operating the laser system including generating a laser beam at a target wavelength by orienting a tuning optic of the laser system at a first position and directing a beam portion through the wavelength measurement system;

(b) calibrating the wavelength measurement system to an absolute reference;

(c) orienting said tuning optic to a second position such that the wavelength of the laser beam measured by the wavelength measurement system after a predetermined period of laser operation is at the target value;

(d) comparing the first position with the second position of the tuning optic; and

(e) determining a drift compensation value for the measurement system based on a result of the comparing step.

8. (original) The method of Claim 7, further comprising the steps of:

(f) repeating steps (c) through (e) a number times after additional periods of laser operation; and

(g) storing the drift compensation values versus laser operation period for use with a wavelength stabilization routine of said laser system.

9. (original) The method of any of Claims 1, 3, 5 or 7, further comprising the steps of calculating and storing data corresponding to corrected offsets for the wavelength measurement system following re-calibration to the absolute reference.

10. (original) The method of any of claims 1, 3, 5 or 7, wherein the wavelength measurement system comprises a monitor etalon.

11. (original) The method of claim 10, wherein the drift compensation values are determined by comparing wavelength values determined using the monitor etalon with values determined using a calibrated spectrometer in a test run.

12. (original) The method of claim 10, wherein the drift compensation values are determined by comparing wavelength values determined using the monitor etalon with values determined using a reference optical transition line.

13. (original) The method of claim 10, wherein the drift compensation values are determined by comparing wavelength values determined using the monitor etalon with values determined using a second monitor etalon that is re-calibrated periodically, such that magnitudes of the drift compensation values are determined as the difference between the wavelengths measured by the first and second monitor etalons.

14. (original) The method of claim 10, wherein the drift compensation values are tabulated with each entry in a table corresponding to a drift compensation value at a different amount of laser operation for a given set of laser operation conditions.

15. (original) The method of claim 14, wherein the amount of laser operation is measured versus a parameter that generally increases as the laser operates, wherein that parameter is selected from the group of parameters consisting of as time, pulse count, input energy to the discharge, and total output energy.

16. (original) The method of Claim 15, wherein different tables are generated corresponding to differing values of laser operation conditions including at least one condition selected from the group of conditions consisting of repetition rate, burst rate, output power, optical arrangement, discharge conditions, gas mixture composition, gas mixture age, age of laser chamber and age of resonator optics.

17. (original) The method of claim 10, wherein the drift compensation values are calculated from a function that is generated corresponding to measured amounts of drift of the monitor etalon versus periods of laser operation.

18. (original) The method of claim 17, wherein the amount of laser operation is measured versus a parameter that generally increases as the laser operates, wherein that parameter is selected from the group of parameters consisting of as time, pulse count, input energy to the discharge, and total output energy.

19. (original) The method of Claim 18, wherein different tables are generated corresponding to differing values of laser operation conditions including at least one condition selected from the group of conditions consisting of repetition rate, burst rate, output power, optical arrangement, discharge conditions, gas mixture composition, gas mixture age, age of laser chamber and age of resonator optics.

Claim 20. (previously canceled)